

Application No. 09/855,255

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REMARKS

In the Official Action mailed 12 July 2005, the Examiner reviewed claims 1-46. The Examiner rejected claims 1, 5-12, 26 and 29-30 under 35 U.S.C. §103(a) and rejected claims 2-4 under 35 U.S.C. §103(a). Examiner has allowed claims 13-25, 27-28, 31-42 and 46.

No claims are amended. Claims 1-46 remain pending.

The Examiner's rejections are respectfully traversed below.

Rejection of Claims 1, 5-12, 26 and 29-30 under 35 U.S.C. §103(a)

The Examiner rejected claims 1, 5-12, 26 and 29-30 as unpatentable over Park (US Patent No. 6,594,359) in view of Lee (US Patent No. 6,563,803) and in further view of Shennib (US Patent No. 5,197,332). Applicant respectfully requests reconsideration. The Examiner has misinterpreted the references, and therefore has not established a combination that includes all the limitations in the claims. In addition, the Examiner has not provided a basis for a position that there would be a motivation to combine the references.

The Examiner's primary reference is Park, which teaches technology for side tone removal and echo cancellation applied in a switching system. The side tones are generated by the PCM to analog conversion on the switch of a signal from a first subscriber, as described by Park at column 1, lines 63-65. The echos are generated at the second subscriber's phone, and canceled by a filter on the switch. This approach eliminates the need to include echo cancellation and side tone cancellation circuits on the phone itself, where fewer resources are typically available for such processes. See, Park, column 4, lines 32-41.

The Examiner has misinterpreted at least the Park reference. Claim 1 requires that the amplification gain be "based upon the near-end signal using a fitting formula for correction of hearing loss", and that the amplification gain be applied to the "combined signal". These features are not found in Park, as the Examiner has mistakenly asserted. The Examiner identifies amplifier 306 in Fig. 3 of Park as performing the amplification of the combined signal, and the output of adder 303 as the combined signal. However,

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the output of the adder 303 is a side tone filtered version of the signal from telephone A, which in the Examiner's reading qualifies as the near-end signal. The adder 303 does not output a combination of a signal from telephone B ("far-end signal") and a signal from telephone A ("near-end signal"). The Examiner has apparently mistaken the output of the side tone canceling filter 304 as the "far-end signal". However, the output of the filter 304 is merely "the values of the side tones" to be removed from the near-end signal. The Examiner is apparently interpreting the fact that the output of the adder 315 is applied to the side tone canceling filter 304 as suggesting that the output of the filter is the far-end signal. However, this reading of the reference is a mistake. The far-end signal is applied to the filter 304 because it is an adaptive filter, and utilizes feedback from the signal in order to determine the values of the side tones. See, Park, column 3, lines 34-38. Therefore, the output of the adder 303 is a filtered copy of the near-end signal, and not the combination required to meet the claim limitation. There is no amplifier in Park that applies an amplification gain to a combined signal as required by claim 1. Thus, the Examiner's prima facie case is based on a mistake in fact.

The Examiner acknowledges that Park does not teach the limitation in claim 1, reading as follows:

"(b) removing a portion of the background noise from the near-end signal to create a noise-reduced near-end signal;"

The Examiner relies on Lee to suggest this feature. Lee describes an acoustic echo canceller adapted to be used on a mobile phone, in which a high pass filter is used to reduce background noise in a near end signal. The Examiner argues that it would be obvious to combine Lee with Park "in order to reduce the acoustic echo in communication system as suggested by Lee at column 2, lines 58-67." However, this rationale for combining the references is mistaken. In particular, Park already includes echo cancellation, and teaches applying echo cancellation in a switch system away from the telephone. Lee teaches applying echo cancellation at the telephone itself. The two teachings are inconsistent, and would not be combined by persons having skill in the art.

The Examiner acknowledges further that the combination of Park and Lee does not teach the limitation in independent claim 1, reading as follows:

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“(a) determining an amplification gain based upon the near-end signal using a fitting formula for correction of hearing loss;”

The Examiner relies upon Shennib, citing Fig. 4, column 3, lines 52-67 and column 10, lines 1-10, to suggest this feature.

Shennib describes a headset hearing tester used for determining a fitting for a hearing aid. Fig. 4 of Shennib shows basic steps of hearing evaluation and hearing aid fitting processes. Column 3, lines 52-67 of Shennib describes hearing aid fitting capabilities, and programming a hearing aid with a fitting formula, that can be determined with a test using the headset. Column 10, lines 1-10 of Shennib describe prescriptions used for hearing aid fitting. Therefore, Shennib teaches using hearing aid fitting formulas for hearing aids. There is nothing in the reference to suggest that fitting formulas for hearing aids could be applied for processing speech signals as recited in claim 1.

The Examiner's position on motivation to combine reads as follows:

“Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Shennib, into (sic) view of Park and Lee in order to reduce the acoustic echo in communication system as suggested by Lee at column 2, lines 58-67.”

This comment is conclusory, and does not address motivation to apply fitting formulas prepared for hearing aids as taught by Shennib in a communication system as taught by Park. The Examiner does not say, for example, how this hearing aid fitting technology could be applied in the system described by Park, which is executed remote from a telephone and not directed at issues of hearing loss for users, such as would be mitigated by a fitting formula.

The Examiner takes the mistaken position discussed above that the amplifier 306 of Park satisfies the step requiring amplification of a combined signal (output by adder 303) including the noise-reduced near-end signal and the far-end signal. This mistake undermines the Examiner's position on the motivation to combine. In particular, even if the output of the adder 303 were a combination of the near-end signal and the far-end signal, it is unclear why one would apply an amplification gain at amplifier 306 based upon the near-end signal and a fitting formula used for correction of hearing loss. The

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amplifier 306 amplifies an analog signal at the output of adder 303 that has been processed to remove side tones caused by conversion from PCM to analog form. The output of the amplifier 306 is applied to a clipper 307, which is inconsistent with prior amplification by amplifier 306 according to a fitting formula.

Claims 5-12 and 29-30 depend from claim 1, and are patentable for at least the same reasons, and because of the unique combinations recited.

Accordingly, reconsideration of the rejection of claims 1, 5-12 and 29-30 is respectfully requested.

Rejection of Claims 2-4 under 35 U.S.C. §103(a)

The Examiner rejected claims 2-4 as unpatentable over Park (US Patent No. 6,594,359) in view of Lee (US Patent No. 6,563,803) and in further view of Shennib (US Patent No. 5,197,332) and in further view of Cornelisse (US Pub. No. 2002/0076072). Applicant respectfully requests reconsideration.

Claims 2-4 recite particular processes for determining amplification gain based on the near end signal. The processes are all incompatible with processing at the amplifier 306 of Park as discussed above.

The Examiner relies upon Cornelisse to suggest these features. Cornelisse describes hearing aid technology, unrelated to the communication system of Park and not applicable to amplification gain at an amplifier like amplifier 306 of Park. Furthermore, the Examiner's stated motivation to combine relates to reducing acoustic echo. This comment by the Examiner is clearly a mistake, as it is irrelevant to Cornelisse.

In addition, claims 2-4 depend from claim 1, and are patentable for at least the same reasons, and because of the unique combinations recited.

Accordingly, reconsideration of the rejection of claims 2-4 is respectfully requested.

Allowable Subject Matter

Claims 13-25, 27-28, 31-42 and 46 have been allowed by the Examiner. Such claims have not been amended.

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CONCLUSION

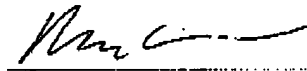
It is respectfully submitted that this application is now in condition for allowance, and such action is requested.

The Commissioner is hereby authorized to charge any fee determined to be due in connection with this communication, or credit any overpayment, to our Deposit Account No. 50-0869 (RXSD 1008-1).

Respectfully submitted,

Dated:

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